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Appellant(s):   Mohnish Anumala   Examiner: Jean Gilles, Jude

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APPEAL BRIEF

The Notice of Appeal was filed on July 16, 2008, and this Appeal Brief is responsive to the Final Office Action dated April 17, 2008.

I.   Real Party in Interest

The real party in interest is Nortel Networks Limited.

II.   Related Appeals and Interferences

Appellant is not aware of any appeals or interferences that are related to the present case.

III.   Status of the Claims

This is an Appeal Brief from a decision dated April 17, 2008, finally rejecting all the claims currently pending in the present application. No claims have been allowed. The currently pending claims are 1-25.

The status of claims 1-25 is rejected.

The rejections of claims 1-25 are the subject of this appeal.

A Notice of Appeal was filed on July 16, 2008.

IV.   Status of Amendments

No amendments to the claims have been made.

V.   Summary of Claimed Subject Matter

Independent Claim 1 sets forth a method for providing network services in an enterprise network (see Enterprise Network 10 in Fig. 1 of the Drawings as originally filed), wherein the enterprise network includes a plurality of forwarding domains (see Fig. 1, forwarding domains 12, 14 and 16), including obtaining at least one end to end

network service parameter from an application program (see line 27 on page 9 through line 9 on page 10 in the Specification as originally filed), and communicating the at least one end to end network service parameter to a plurality of network service modules, each of the network service modules associated with a respective one of the forwarding domains (see lines 10-16 on page 10). Claim 1 further sets forth establishing, by the network service modules, communication paths within each of the forwarding domains, the communication paths within each of the forwarding domains together providing an end to end communication path for a single virtual connection across all of the forwarding domains, such that the communication paths within the forwarding domains are each required to provide network performance for communications over the virtual connection reflecting the at least one end to end network service parameter within their respective forwarding domains (see line 11 on page 14 through line 3 on page 17).

Dependent claim 2 sets forth obtaining a network service request from the application program, where the network service request includes the at least one end to end network service parameter and determining, by the network service modules, whether the communication paths within each of the forwarding domains can be established to provide the network performance reflecting the at least one end to end network service parameter (see line 22 on page 12 through line 4 on page 14). Dependent claim 2 also sets forth in the event of a determination by the network service modules that the communication paths within each of the forwarding domains cannot be established to provide the network performance reflecting the at least one end to end network service parameter, denying the network service request from the application program (see lines 24-30 on page 13).

Dependent claim 3 sets forth establishing, by the network service modules, forwarding information enabling data packets to be forwarded between the communication paths within the forwarding domains (see line 14 on page 15 through line 13 on page 16).

Dependent claim 4 sets forth determining, by each of the network service modules, network service capabilities of networking devices within the respective associated one of the forwarding domains, wherein the establishing of the communication paths within each of the forwarding domains is responsive to the capabilities of the networking devices (see lines 24-30 on page 13).

Dependent claim 5 sets forth determining, by each of the network service modules, network service capabilities of networking devices within the respective associated one of the forwarding domains, and wherein the determining whether the communication paths within each of the forwarding domains can be established to provide the network performance reflecting the at least one end to end network service parameter is responsive to the capabilities of the networking devices (see lines 18-20 on page 13).

Dependent claim 6 further sets forth receiving, by an application server program associated with the application program, a request for application service by an application client associated with the application program, and authenticating, by the application server program, the request for application service by the application client (see lines 13-17 on page 9). Dependent claim 6 further sets forth in the event that the application server program authenticates the request for application service, obtaining a network service request from the application server portion of the application program,

wherein the network service request includes the at least one end to end network service parameter (see lines 18-20 on page 9).

Dependent claim 7 sets forth maintaining, by each of the network service modules, an adjacency data structure describing adjacency relationships of the forwarding domains in the enterprise network (see lines 10-13 on page 12), and wherein the establishing of the forwarding information enabling data packets to be forwarded between the communication paths within the forwarding domains is responsive to the adjacency relationships (see lines 8-13 on page 12).

Dependent claim 8 sets forth that the at least one end to end network service parameter includes an amount of guaranteed bandwidth (see line 27 on page 9 through line 1 on page 10).

Dependent claim 9 sets forth that the at least one end to end network service parameter includes a level of acceptable packet loss (see line 9 on page 10).

Dependent claim 10 sets forth that the at least one end to end network service parameter includes an indication of network reliability (see line 9 on page 10).

Dependent claim 11 sets forth that the at least one end to end network service parameter includes an indication of network delay (see line 9 on page 10).

Dependent claim 12 sets forth subsequent to the establishing of the communication paths within each of the forwarding domains, monitoring network performance of the communication paths within each respective one of the forwarding domains by the associated network service module (see line 29 on page 16 through line 3 on page 17).

Independent claim 13 sets forth a system for providing network services in an enterprise network (see Enterprise Network 10 in Fig. 1), wherein the enterprise network includes a plurality of forwarding domains (see Fig. 1, forwarding domains 12, 14 and 16), including a plurality of network service modules (see NSM-1 22, NSM-2 24, and NSM-3 26 in Fig. 1, see also line 30 on page 18 through line 2 on page 19), each of the network service modules associated with a respective one of the forwarding domains, and wherein the network service modules are operative to obtain at least one end to end network service parameter from an application program (see line 27 on page 9 through line 9 on page 10), and establish communication paths within each of the forwarding domains, the communication paths within each of the forwarding domains together providing an end to end communication path for a single virtual connection across all of the forwarding domains, such that the communication paths within the forwarding domains are each required to provide network performance for communications over the virtual connection reflecting the at least one end to end network service parameter within their respective forwarding domains (see line 11 on page 14 through line 3 on page 17).

Dependent claim 14 sets forth a software module operative to obtain a network service request from the application program, wherein the network service request includes the at least one end to end network service parameter (see line 22 on page 12 through line 4 on page 14), wherein the network service modules are further operative to determine whether the communication paths within each of the forwarding domains can be established to provide the network performance reflecting the at least one end to end network service parameter, and wherein the software module operative to obtain the network service request is further operable, in the event of a determination by the

network service modules that the communication paths within each of the forwarding domains cannot be established to provide the network performance reflecting the at least one end to end network service parameter, deny the network service request from the application program (see lines 24-30 on page 13).

Dependent claim 15 sets forth that the network service modules are further operative to establish forwarding information in a plurality of networking devices enabling data packets to be forwarded between the communication paths within the forwarding domains (see line 14 on page 15 through line 13 on page 16).

Dependent claim 16 sets forth that the network service modules are further operative to determine, by each of the network service modules, network service capabilities of networking devices within the respective associated one of the forwarding domains. Dependent claim 16 also sets forth that the establishment of the communication paths within each of the forwarding domains is responsive to the capabilities of the networking devices (see lines 24-30 on page 13).

Dependent claim 17 sets forth that the network service modules are further operative to determine network service capabilities of networking devices within the respective associated one of the forwarding domains, and that the determination of whether the communication paths within each of the forwarding domains can be established to provide the network performance reflecting the at least one end to end network service parameter is responsive to the capabilities of the networking devices (see lines 18-20 on page 13).

Dependent claim 18 sets forth a program module, operative to obtain a network service request from an application server portion of the application program, wherein the

network service request includes the at least one end to end network service parameter in the event that the application server program authenticates a request for application service from an application client (see lines 18-20 on page 9).

Dependent claim 19 sets forth that the network service modules are further operative to maintain an adjacency data structure describing adjacency relationships of the forwarding domains in the enterprise network (see lines 10-13 on page 12), wherein the establishment of the forwarding information enabling data packets to be forwarded between the communication paths within the forwarding domains is responsive to said adjacency relationships (see lines 8-13 on page 12).

Dependent claim 20 sets forth that the at least one end to end network service parameter includes an amount of guaranteed bandwidth (see line 27 on page 9 through line 1 on page 10).

Dependent claim 21 sets forth that the at least one end to end network service parameter includes a level of acceptable packet loss (see line 9 on page 10).

Dependent claim 22 sets forth that the at least one end to end network service parameter includes an indication of network reliability (see line 9 on page 10).

Dependent claim 23 sets forth that the at least one end to end network service parameter includes an indication of network delay (see line 9 on page 10).

Dependent claim 24 sets forth that the network service modules are further operative to, subsequent to establishing the communication paths within each of the forwarding domains, monitor network performance of the communication paths within each respective one of the forwarding domains (see line 29 on page 16 through line 3 on page 17).

Independent claim 25 sets forth a system for providing network services in an enterprise network (see Enterprise Network 10 in Fig. 1), wherein the enterprise network includes a plurality of forwarding domains (see Forwarding Domains 12, 14 and 16 in Fig. 1), including means for obtaining at least one end to end network service parameter from an application program (see line 27 on page 9 through line 9 on page 10), and means for communicating the at least one end to end network service parameter to a plurality of network service modules (see NSM-1 22, NSM-2 24, and NSM-3 26 in Fig. 1, see also line 30 on page 18 through line 2 on page 19), each of the network service modules associated with a respective one of the forwarding domains (see lines 10-16 on page 10). Independent claim 25 further sets forth a means for establishing, by the network service modules, communication paths within each of the forwarding domains, the communication paths within each of the forwarding domains together providing an end to end communication path for a single virtual connection across all of the forwarding domains, such that the communication paths within the forwarding domains are each required to provide network performance for communications over the virtual connection reflecting the at least one end to end network service parameter within their respective forwarding domains (see line 11 on page 14 through line 3 on page 17).

VI.   Grounds of Rejection to be Reviewed on Appeal

Claims 1-25 stand rejected 1-25 for obviousness under 35 U.S.C. 103, based on the combination of published United States patent applications US 2002/133554 of Nykanen et al. ("Nykanen") and US 2002/0114281 of Rosu et

al. ("Rosu"), together with newly cited published United States patent

application 2004/0179481 of Graupner ("Graupner").

VII. Argument

The Examiner has failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a) in the rejection of claims 1-25 using the combination of Nykanen, Rosu and Graupner.

To establish *prima facie* obviousness of a claimed invention, all the claim

limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d

981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in

judging the patentability of that claim against the prior art." *In re Wilson*, 424

F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Appellant asserts that the

combination of Nykanen, Rosu and Graupner fails to teach or suggest the

limitations of the present independent claims 1, 13 and 25, which each include

establishing connections in multiple forwarding domains based on a previously

communicated end to end network service parameter, such that communications

of a multidomain virtual circuit are required to reflect the previously

communicated end to end network service parameter in each connection.

If an independent claim is nonobvious under 35 U.S.C. 103, then any

claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d

1596 (Fed. Cir. 1988). Appellant further asserts that the dependent claims 2-12

and 14-24 are also nonobvious over the combination of Nykanen, Rosu and

Graupner based on the nonobviousness of independent claims 1 and 13.

United States patent application US 2002/133554 of Nykanen et al. ("Nykanen")

Nykanen discloses a system for facilitating Web service component

access. The One Logical View to Broker (OLVB) Application Program Interface

(API) of Nykanen reduces the complexity of an application interface and

increases the portability of the application. Network Service Broker related

parameters (204, 304) in Nykanen allow solicitation of a best match Network

Service Broker or Web service component. Real-time business relationships

between a Service Provisioning Infrastructure (208) and the Network Service

Brokers (212, 232, 238) are facilitated in Nykanen by the matchmaking function

(416).

United States patent application US 2002/0114281 of Rosu et al. ("Rosu")

Rosu discloses evaluating the performance of communication paths in a

multi-service network, including interconnections of different single

communication services such as wireless and wireline telephone systems and

internet access systems. Data pertaining to a common performance parameter is

acquired for each type of communication path, and a performance graph for each

type of path is constructed from the data.

United States patent application US 2004/0179481 of Graupner ("Graupner")

Graupner discloses an overlay network of multiple nodes with an initiator node, connected via references. Location independent references in Graupner interconnect nodes to form the overlay topology. Graupner uses position information in the overlay topology for message routing between applications, and for generating service identifiers.

Claims 1-25:

Independent claim 1 includes the limitation of *establishing connections in multiple forwarding domains based on a previously communicated end to end network service parameter, such that communications of a multidomain virtual circuit are required to reflect the previously communicated end to end network service parameter in each connection.* Independent claims 13 and 25 include analogous limitations. This feature of the presently claimed invention is not disclosed or suggested by the combination of Nykanen, Rosu and Graupner.

In contrast, none of the cited references include any mention of even the desirability of establishing connections in multiple forwarding domains such that communications over a specific virtual circuit across those paths reflect a previously communicated end to end network service parameter. In Nykanen, *independent* operation of *individual* networks is shown in Fig. 2, in which a Service Provisioning Infrastructure 208 connects directly and *independently* to *each individual one* of the Network Service Brokers (212, 220 and 238). The Network Service Brokers shown in Fig. 2 of Nykanen each service *separate, un-*

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connected networks (Network A 216, Network B 222 and Network C 240).

Similarly, Fig. 3 of Nykanen shows a number of Web Service Components (314,

316, 318 and 320) that are *independently* connected to a Web Service Registry

312. Neither the Network Service Brokers of Fig. 2, nor the Web Service

Components of Fig. 3 in Nykanen are described as establishing connections in

multiple forwarding domains based on a previously communicated end to end

network service parameter, such that communications of a multi-domain virtual

circuit are required to reflect the previously communicated end to end network

service parameter in each connection, as in the present independent claims.

Similarly in Fig. 3, Web Service Component 1 318 of Nykanen is also shown

independently and *individually* connected through Service Provisioning

Infrastructure 308 to an Application 302.

The teachings of Rosu also do not disclose or suggest establishing

connections in multiple forwarding domains based on a previously communicated

end to end network service parameter, such that communications of a multi-

domain virtual circuit are required to reflect the previously communicated end to

end network service parameter in each connection. It should first be recognized

that Rosu constructs performance graphs from performance data, and *does not*

establish communication paths. See paragraph 20 of Rosu, which describes the

performance graphs as follows:

. . . More specifically, the performance graph positioned at the intersection of a
particular row and column of the matrix **is constructed from performance data** of
a communication path which is formed by interconnecting the communication
services associated with the particular row and column, respectively. Thus,
performance graph 50a **is constructed from data acquired from heterogeneous**
communication path 40 shown in FIG. 1, connecting telephone 24 and PC 26. In

like manner, ***performance graph 50b is constructed from data acquired from homogenous communication path 48***. . . (emphasis added)

      The above shows how the performance graph of <u>Rosu</u> is a data construct, and does not consist of or establish any network connections. This is further confirmed by the <u>Rosu</u> Abstract, which states in significant part as follows:

Data pertaining to at least one common performance parameter is acquired for each type of communication path, and ***a performance graph for each type of path is constructed from the data respectively acquired therefor***. The performance graphs for respective communication paths are evaluated and compared with one another, ***to provide information useful for improving network performance***. (emphasis added)

      Thus <u>Rosu</u> *acquires* performance data of different types of *previously established* networks in order to construct the performance graph. See also paragraph 10 of <u>Rosu</u>, which states that "at least one of the performance parameters comprises a representation of the number of connections *successfully completed* through a communication path, relative to the number of connections attempted." The teachings of <u>Rosu</u> do not describe establishing communication paths at all.

      In response to Applicant's response describing these differences between the present claims and the combination of <u>Nykanen</u> and <u>Rosu</u>, the Examiner additionally cited <u>Graupner</u> in the claim rejections based on 35 U.S.C. 103. However, a complete reading of <u>Graupner</u> reveals that it also differs fundamentally from the above highlighted features of the present independent claims. Specifically, <u>Graupner</u> discloses establishing an *overlay topology* based on references that are location independent, and generation of *service identifiers*.

As a first point of distinction, the nodes that make up the overlay topology in Graupner *do not establish connections within the domains they are associated with.* See Fig. 1 of Graupner, specifically Node C in First Domain 30, and Domain 40. Nothing in Graupner indicates that the nodes of the overlay network 10 establish connections within their domains, e.g. domains 30 and 40 of Fig. 1. Accordingly, like the disclosures of Nykanen and Rosu, the overlay network nodes described by Graupner do not provide any way of establishing connections in multiple forwarding domains based on a previously communicated end to end network service parameter, such that communications of a multidomain virtual circuit are required to reflect the previously communicated end to end network service parameter in each connection, as in the present independent claims.

Additionally, the service identifiers of Graupner are described as being formed by "generating a local name for each individual cluster; concatenating the local name with a nodes own identification path; and passing the concatenated path on a descendent nodes" (see paragraph 11 of Graupner). Such manipulation of node names to form service identifiers does not teach establishing connections of any kind, far less connections within corresponding domains, and accordingly also does not disclose or suggest *establishing connections in multiple forwarding domains based on a previously communicated end to end network service parameter, such that communications of a multidomain virtual circuit are required to reflect the previously communicated end to end network service parameter in each connection,* as expressly set forth in the present independent claims.

For the above reasons, the combination of <u>Nykanen</u>, <u>Rosu</u> with <u>Graupner</u> does not disclose or suggest all the features of the present independent claims 1, 13 and 25. The combination of <u>Nykanen</u>, <u>Rosu</u> and <u>Graupner</u> accordingly does not establish a *prima facie* case of obviousness with regard to independent claims 1, 13 and 25 under 35 U.S.C. 103. As to the remaining dependent claims, they each depend from independent claims 1 and 13, and are respectfully believed to be patentable over the combination of <u>Nykanen</u>, <u>Rosu</u> and <u>Graupner</u> for at least the same reasons.

Conclusion

For the reasons above, Appellant respectfully submits that the rejections of the present claims under 35 U.S.C. 103 are improper for at least the reasons set forth above. Appellant accordingly requests that the rejections be withdrawn and the pending claims be allowed.

Respectfully submitted,

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VIII. Claims Appendix

1. (previously presented) A method for providing network services in an enterprise network, wherein said enterprise network includes a plurality of forwarding domains, comprising:

obtaining at least one end to end network service parameter from an application program;

communicating said at least one end to end network service parameter to a plurality of network service modules, each of said network service modules associated with a respective one of said forwarding domains; and

establishing, by said network service modules, communication paths within each of said forwarding domains, said communication paths within each of said forwarding domains together providing an end to end communication path for a single virtual connection across all of said forwarding domains, such that said communication paths within said forwarding domains are each required to provide network performance for communications over said virtual connection reflecting said at least one end to end network service parameter within their respective forwarding domains.

2. (previously presented) The method of claim 1, further comprising:

obtaining a network service request from said application program, wherein said network service request includes said at least one end to end network service parameter;

determining, by said network service modules, whether said communication paths within each of said forwarding domains can be established to provide said network performance reflecting said at least one end to end network service parameter; and

in the event of a determination by said network service modules that said communication paths within each of said forwarding domains cannot be established to provide said network performance reflecting said at least one end to end network service parameter, denying said network service request from said application program.

3. (original) The method of claim 1, further comprising establishing, by said network service modules, forwarding information enabling data packets to be forwarded between said communication paths within said forwarding domains.

4. (previously presented) The method of claim 1, further comprising:

determining, by each of said network service modules, network service capabilities of networking devices within said respective associated one of said forwarding domains; and

wherein said establishing of said communication paths within each of said forwarding domains is responsive to said capabilities of said networking devices.

5. (previously presented) The method of claim 2, further comprising:

determining, by each of said network service modules, network service capabilities of networking devices within said respective associated one of said forwarding domains; and

wherein said determining whether said communication paths within each of said forwarding domains can be established to provide said network performance reflecting said at least one end to end network service parameter is responsive to said capabilities of said networking devices.

6. (previously presented) The method of claim 1, further comprising:

receiving, by an application server program associated with said application program, a request for application service by an application client associated with said application program;

authenticating, by said application server program, said request for application service by said application client; and

in the event that said application server program authenticates said request for application service, obtaining a network service request from the application server portion of said application program, wherein said network service request includes said at least one end to end network service parameter.

7. (original) The method of claim 3, further comprising:

maintaining, by each of said network service modules, an adjacency data structure describing adjacency relationships of said forwarding domains in said enterprise network; and

wherein said establishing of said forwarding information enabling data packets to be forwarded between said communication paths within said forwarding domains is responsive to said adjacency relationships.

8. (original) The method of claim 1, wherein said at least one end to end network service parameter comprises an amount of guaranteed bandwidth.

9. (original) The method of claim 1, wherein said at least one end to end network service parameter comprises a level of acceptable packet loss.

10. (original) The method of claim 1, wherein said at least one end to end network service parameter comprises an indication of network reliability.

11. (original) The method of claim 1, wherein said at least one end to end network service parameter comprises an indication of network delay.

12. (previously presented) The method of claim 1, further comprising, subsequent to said establishing of said communication paths within each of said forwarding domains, monitoring network performance of said communication paths within each respective one of said forwarding domains by said associated network service module.

13. (previously presented) A system for providing network services in an enterprise network, wherein said enterprise network includes a plurality of forwarding domains, comprising:

a plurality of network service modules, each of said network service modules

associated with a respective one of said forwarding domains, and wherein said network

service modules are operative to:

obtain at least one end to end network service parameter from an application

program; and

establish communication paths within each of said forwarding domains, said

communication paths within each of said forwarding domains together providing an end

to end communication path for a single virtual connection across all of said forwarding

domains, such that   said communication paths within said forwarding domains are each

required to provide network performance for communications over said virtual

connection reflecting said at least one end to end network service parameter within their

respective forwarding domains.

14. (previously presented) The system of claim 13, further comprising:

a software module operative to obtain a network service request from said

application program, wherein said network service request includes said at least one end

to end network service parameter; and

wherein said network service modules are further operative to determine whether

said communication paths within each of said forwarding domains can be established to

provide said network performance reflecting said at least one end to end network service

parameter; and

wherein said software module operative to obtain said network service request is

further operable, in the event of a determination by said network service modules that

said communication paths within each of said forwarding domains cannot be established

to provide said network performance reflecting said at least one end to end network

service parameter, deny said network service request from said application program.

15. (original) The system of claim 13, wherein said network service modules are further

operative to establish forwarding information in a plurality of networking devices

enabling data packets to be forwarded between said communication paths within said

forwarding domains.

16. (previously presented) The system of claim 13, wherein said network service modules

are further operative to:

      determine, by each of said network service modules, network service capabilities

of networking devices within said respective associated one of said forwarding domains;

and

      wherein said establishment of said communication paths within each of said

forwarding domains is responsive to said capabilities of said networking devices.

17. (previously presented) The system of claim 14, wherein said network service modules

are further operative to:

      determine network service capabilities of networking devices within said

respective associated one of said forwarding domains; and

      wherein said determination of whether said communication paths within each of

said forwarding domains can be established to provide said network performance

reflecting said at least one end to end network service parameter is responsive to said capabilities of said networking devices.

18. (previously presented) The system of claim 13, further comprising:

a program module, operative to obtain a network service request from an application server portion of said application program, wherein said network service request includes said at least one end to end network service parameter in the event that said application server program authenticates a request for application service from an application client.

19. (original) The system of claim 14, wherein said network service modules are further operative to:

maintain an adjacency data structure describing adjacency relationships of said forwarding domains in said enterprise network; and

wherein said establishment of said forwarding information enabling data packets to be forwarded between said communication paths within said forwarding domains is responsive to said adjacency relationships.

20. (original) The system of claim 13, wherein said at least one end to end network service parameter comprises an amount of guaranteed bandwidth.

21. (original) The system of claim 13, wherein said at least one end to end network service parameter comprises a level of acceptable packet loss.

22. (original) The system of claim 13, wherein said at least one end to end network service parameter comprises an indication of network reliability.

23. (original) The system of claim 13, wherein said at least one end to end network service parameter comprises an indication of network delay.

24. (previously presented) The system of claim 13, wherein said network service modules are further operative to, subsequent to said establishing of said communication paths within each of said forwarding domains, monitor network performance of said communication paths within each respective one of said forwarding domains.

25. (previously presented) A system for providing network services in an enterprise network, wherein said enterprise network includes a plurality of forwarding domains, comprising:

means for obtaining at least one end to end network service parameter from an application program;

means for communicating said at least one end to end network service parameter to a plurality of network service modules, each of said network service modules associated with a respective one of said forwarding domains; and

means for establishing, by said network service modules, communication paths within each of said forwarding domains, said communication paths within each of said forwarding domains together providing an end to end communication path for a single

virtual connection across all of said forwarding domains, such that said communication paths within said forwarding domains are each required to provide network performance for communications over said virtual connection reflecting said at least one end to end network service parameter within their respective forwarding domains.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

None.